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HUYNH, SON P	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/882,036	PAUL ET AL.	
	Examiner	Art Unit	
	SON P. HUYNH	2424	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 24-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 24-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-8, 24-42 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues Chiu fails to teach the concept of a threshold of lost frames. Chiu teaches a threshold of human visual perception, but this threshold does not provide any useful information regarding the amount of lost frames (page 10, paragraph 3). This argument is respectfully traversed.

Chiu discloses threshold of human visual perception is calculated/determined based on information in frames. This threshold is used to determine whether a lost or corrupt frame should be retransmitted, and if retransmitted, it should encode as high priority or low priority (see include, but are not limited to, col. 4, lines 18-49, col. 5, line 1-21). Thus, the threshold in Chiu provides useful information regarding the amount of lost/corrupted frames.

In addition, Masaki also discloses threshold provides information regarding amount of lost/dropped frames (see include, but not limited to, col. 19, line 1-col. 20, line 30).

Applicant further argues cited references do not teach or suggest encoding a gradually increasing amount of additional low priority frames as high priority frames until

less than the threshold amount of low priority frames are being lost" (page 10, paragraphs 1-2). This argument is respectfully traversed.

As discussed in the office action mailed 9/25/07, page 5, Chiu discloses encoding an additional low priority frames as high priority frames. Chiu further discloses quantizer 22 has an adjustable step size to vary the quantization of the transformed error signal between a coarse step and a fine step (col. 3, lines 42-50). Masaki discloses encoding device receives error notice from receiving device when average error rate exceeds a certain threshold. The frame dropping/quantization control portion in the encoding device performs threshold control of lowering a frame dropping threshold for determining whether to store the video data in the temporary buffer into the transmission buffer from a predetermined value when receiving the error signal from the video receiving device, and when not receiving notice of the error signal in a predetermined contain period of times, returning the frame dropping threshold to the predetermined value. Since frame dropping control is performed with a decreased frame dropping threshold until the communication condition settles into a good condition, the frame dropping control can be made by taking the communication condition into consideration (see include, but not limited to, col. 19, line 1-col. 20, line 30). Thus the combination of the reference discloses encoding a gradually increasing amount of additional low priority frames (as result of control threshold of lowering/decreasing a frame dropping threshold) as high priority frames until less than the threshold amount of low priority frames are being lost (until the communication condition settles into a good condition or until no error signal is received).

For reasons given above, rejections on the claims are analyzed as discussed below.

Claims 9-23 have been canceled.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-8, 24-26 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. The claimed method of transmitting information comprising: encoding...., is broad enough that the claim could be completely performed mentally, verbally or without a machine nor is any transformation apparent. For example, encoding(packing into code)...could be performed by a person, a network could be mail network.

Claims 27-34 recite " a computer readable medium storing instructions..." do not necessarily define structural and functional interrelationship between computer

executable instructions and computer component which permit computer program's functionality to be realized, and thus not statutory (see M.P.E.P 2106.01). For example, a computer readable medium storing instructions/software code, however, when the computer readable medium is not implemented and/or not being executed by the a computer/processor, functionality of computer program in the computer readable medium is not realized.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7, 24-33, 35-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 6,275,531) in view of Chiu et al. (US 6,233,283) and Masaki et al. (US 6,356,309).

Regarding claim 1, Li discloses encoding a plurality of frames as either high priority frames (e.g. base layers) or low priority frames (e.g. enhancement layers) – see figure 1; dropping low priority frames (the number of enhancement layers are determined or limited by the network that provides the transmission channel to the destination point.

While the base layer bitstream is always transmitted to the destination point, omitting one or more enhancement layers due to a multitude of reasons such as the bandwidth of the channel, the destination device itself – see col. 3, lines 17-58). Li also disclose feedback comprises information regarding the transmission channel bandwidth, destination device itself, etc. is received – (col. 3, lines 17-58) and system for encoding video data, such that quality of the final image is gradually improved as more bits are received, wherein low priority frame (enhancement layer bitstreams) is used to improve quality of image (col. 3, lines 5-17). Thus, the amount of additional low priority frames is gradually increased and encoded so that the quality of the final image is gradually improved as more bits are received. However, Li does not specifically disclose receiving information about the loss of low priority frames by a network; and if more than a threshold amount of low frames are being lost, encoding an additional number of the low priority frames as high priority frames until less than the threshold amount of low priority frames are being lost, wherein the additional high priority frames are encoded at a lower quality than is generally used for high priority frames.

Chiu, in an analogous art, discloses receiving information about loss of low priority frames by the network (e.g. receiving information about loss of number of macroblocks of error signal D by the network via feedback loop 16- figure, col. 3, line 5- col. 4, line 38); and if more than a threshold amount of low priority frames are being lost, encoding an additional number of the low priority frames as high priority frames (interpreted as the perceptual preprocessor 50 determines that the loss of number of macroblocks of error signal D is more than threshold n1, the error signal D from the

frame is directed to encoder branch 12 (used to encoded signal as base layer-high priority) for encoding as high priority and retransmit to the receiver – see col. 3, lines 30-38; col. 4, lines 18-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li to use **the teaching** as taught by Chiu in order to minimize signal interruption, and furthermore increase possibility that the missing frame is received by a receiver (col. 4, lines 30-42). Chiu further discloses the encoder branch 12 for encoding frame onto base layer (high priority frame) comprises quantizer 22; the quantizer 22 has an adjustable step size to vary the quantization of the transformed error signal between a coarse step and a fine step (col. 3, lines 45-46).

Chiu further discloses quantizer has an adjustable step size to vary the quantization of the transformed error signal between a coarse step and a fine step (col. 3, lines 43-47). However, Li in view of Chiu does not explicitly disclose the additional high priority frames (error signal D for missing frames) are encoded as lower quality than is generally used for high priority frames (used for encoding frames into base layer as high priority frames – col. 3, lines 30-39) and encoding an increasing amount of addition low priority frame until less than the threshold amount of low priority of low priority frames are being lost.

Masaki discloses in response to receiving the error rate larger than threshold, the quantization step for the video frame or for non-priority area is set larger or coding device does not perform operation and transmission for non-priority area (see including, but is not limited to, col. 67, lines 10-35; col. 68, lines 25-59). As a result of setting the

size of quantization step larger or not to perform operation and transmission operation for non-priority area, the frames to be transmitted are encoded as a lower quality (e.g. coarse, no data for non-priority area) than is generally used for the frames to be encoded (e.g., in error free mode).

Masaki further discloses encoding device receives error notice from receiving device when average error rate exceeds a certain threshold. The frame dropping/quantization control portion in the encoding device performs threshold control of lowering a frame dropping threshold for determining whether to store the video data in the temporary buffer into the transmission buffer from a predetermined value when receiving the error signal from the video receiving device, and when not receiving notice of the error signal in a predetermined contain period of times, returning the frame dropping threshold to the predetermined value. Since frame dropping control is performed with a decreased frame dropping threshold until the communication condition settles into a good condition, the frame dropping control can be made by taking the communication condition into consideration (see include, but not limited to, col. 19, line 1-col. 20, line 30). Thus Masaki discloses encoding a gradually increasing amount of additional low priority frames (as result of control threshold of lowering/decreasing a frame dropping threshold) as high priority frames (frames being encoded for transmitting to receiving device) until less than the threshold amount of low priority frames are being lost (until the communication condition settles into a good condition or until no error signal is received).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li in view of Chiu's teaching to use the teachings as taught by Masaki in order to yield predictable results such as to minimize/suppress delay time so that a moving picture with smooth movement (desired quality) can be displayed on the receiving side...(col. 9, lines 40-47).

Regarding claim 2, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses the encoding layers 30 or 40 in negotiation with the network and intermediate devices determine the number N of bitstream layers t be generated according to transmission channel bandwidth, destination device itself, etc. is received – (col. 3, lines 17-58, col. 5, lines 47-67). It is obvious that a feedback (about the transmission channel bandwidth, network, etc.) is received from the network which comprises a response to a request for information on whether the network currently has available capacity to transmit additional high priority traffic to improve quality of picture.

Alternatively, Masaki further discloses the coding device monitors the error signal/notice from receiving device based on error rate and switching between error mode and error free mode in response to the error signal (col. 67, lines 67-67). Inherently, the feedback (error signal/notice) is received from the network which comprises a response to a request for information on whether the network currently has available capacity to transmit additional high priority traffic.

Regarding claim 3, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses

receiving a frame of video data to be encoded (receiving frame of video data from original video input 20 – figure 1);

encoding and transmitting the frame as a high priority video coded frame (i.e. base layer, enhancement layer 1, etc.) if permission was granted to send high priority data (i.e. possible bandwidth, or no congestion, or other physical constraints (figure 1, col. 3, lines 30-58, col. 5, line 57-col. 6, line 15). Li further discloses negotiation with the network to determine condition of network to send base layer and high priority enhancement layer (col. 5, line 48-col. 6, line 7). Inherently, the encoding layers request permission and receiving response to the request to send data (as high priority data i.e., for sending base layer) over network.

Regarding claim 4, Li in view of Chiu and Masaki teaches a method as discussed in claim 3 . Li further discloses encoding and transmitting the frame as a low priority frame if permission was not granted to send high priority data (i.e. encoding the frame as enhancement layer N, which can be dropped if there is no bandwidth available – col. 3, lines 16-27; col. 5, lines 40-67).

Regarding claim 5, Li in view of Chiu and Masaki teaches a method as discussed in claim 3. Li further discloses deleting (dropping/omitting) the video coded frame from

transmission if permission was not granted to send high priority data (col. 3, lines 16-27, col. 5, lines 40-67).

Regarding claim 6, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses requesting permission to send high priority data (negotiation with the network to send base layer and high priority enhancement layer – col. 5, lines 47-67);

encoding a high priority video frame at substantially the same time as the requesting permission to transmit high priority data (encoding a video layer substantially the same time as the negotiation with the network and intermediated device to determine the number of N of bitstreams layer to be generated and layers to be transmitted – col. 5, lines 47-67); and

transmitting the frame as a high priority video coded frame (i.e. base layer, enhancement layer 1, etc.) if permission was granted to send high priority data (i.e. possible bandwidth, or no congestion, or other physical constraints (figure 1, col. 3, lines 30-58, col. 5, line 57-col. 6, line 15); and

deleting (dropping/omitting) the video coded frame from transmission if permission was not granted to send high priority data (col. 3, lines 16-27, col. 5, lines 40-67). Li does not specifically disclose buffer the frames.

Masaki further discloses buffering the video frame at substantially the same time as requesting permission to transmit data (buffering the video frames in temporary buffer, transmission buffer, or retransmission buffer at substantially the same time as

requesting permission to transmit the data– see including, but is not limited to figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li in view of Chiu's teaching (discussed above) and Masaki's teaching (discussed above) to use the teaching as further taught by Masaki in order to yield predictable results such as to prevent overflow/underflow of data.

Regarding claim 7, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses encoding as high priority frames all video frames that are to be transmitted (encoding original video as frames of N bitstream layers that are to be transmitted – figure 1);

for each of the coded frames:

determining permission to send high priority data (determining condition of transmission channel to send the frame – col. 5, line 40-col. 6, line 7);

transmitting the frame as a high priority frame if permission to transmit high priority data was granted (e.g., transmitting the frame if predetermined bandwidth of transmission channel is available – col. 5, line 40-col. 6, line 7); and

transmitting the fame as a low priority frame if permission to transmit high priority data was not granted (for example, transmitting frames in N-M bitstream layers as low priority (the bitstream layer can be dropped/omitted) if there is not enough available bandwidth – col. 3, lines 17-42; col. 5, line 47-col. 6, line 7). Li further discloses the encoder layers in negotiation with the network and intermediate devices determine the number of the

bitstream layers to be generated (col. 5, lines 47-55). Inherently, encoder layers request permission to send data.

Regarding claim 24, the limitations that correspond to the limitations of claim 1 are analyzed as discussed with respect to the rejection of claim 1. Li further discloses the encoder layers in negotiation with the network and intermediate devices determine the number N of bitstream layers to be generated (col. 5, lines 47-67). Inherently, information from the network on how much bandwidth is allocated to the encoder for high priority frames is received (e.g., receiving information of bandwidth of transmission channel, network, intermediate device, destination device capabilities, etc. for number of frames, including high priority frames -col. 3, lines 17-67).

Regarding claim 25, Li in view of Chiu and Masaki teaches a method as discussed in claim 24. Chiu further discloses information about loss of low priority frames by the network is received as network feedback (e.g. feedback loop 16 – figure).

Alternatively, Masaki further discloses information about loss of frame by the network is received as network feedback (i.e. error signal/notice/retransmission request from receiving device – see including, but is not limited to, col. 67, lines 10-52).

Regarding claim 26, Li in view of Chiu and Masaki teaches a method as discussed in claim 24. Chiu further discloses the perceptual preprocessor receives feedback signal and determines whether or not the corrupted framed should be retransmitted (col. 4,

lines 17-38). It is obvious that the information about loss of frames by the network is received using Real Time Control Protocol to fix the error immediately, thereby improve efficiency in data transmission and quality of services.

Regarding claims 27-33, the limitations as claimed are directed toward embodying the method of claims 1-7 in "computer readable medium". It would have been obvious to embody the procedures of Li in view of Chiu's teachings and Masaki's teachings as discussed in claim 1-7 in a "computer readable medium" in order that the instructions could be automatically performed by a processor.

Regarding claims 34-41, the limitations of the computing device as claimed correspond to the limitations of the method as claims in claims 1-7, and are analyzed as discussed with respect to the rejection of claims 1-7.

6. Claims 8, 34 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 6,275,531) in view of Chiu et al. (US 6,233,283) and Masaki et al. (US 6,356,309) as applied to claim 7, 33, 41 above, and further in view of Zhang et al. (US 6,816,194).

Regarding claim 8, Li in view of Chiu and Masaki teaches a method as discussed in claim 7. Li further discloses base layer bitstream is guaranteed (col. 5, line 47-55). However, neither references specifically discloses high priority frames are transmitted

over the network separately than the low priority frames, wherein the high priority frames are transmitted over the network using a guaranteed quality of service trunk, and wherein the low priority frames are transmitted over the network on a best effort truck.

Zhang discloses high priority frames (e.g. base layers) are transmitted over the network separately than the low priority frames (col. 3, lines 37-43; col. 7, line 57-col. 8, line 6), wherein the high priority frames are transmitted over the network using a guaranteed quality of service trunk (e.g. well controlled channel – col. 3, lines 1-12; col. 7, lines 56-63), and wherein the low priority frames are transmitted over the network on a best effort truck (bitstream where the layer can be dropped – col. 3, lines 27-53; col. 10, lines 1-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li in view of Chiu's teaching and Masaki's teaching to use the teaching as taught by Zhang in order to avoid the lost of frame for base layer if the packet loss or error occurs in the low priority frame (enhancement layer) – see col. 3, lines 33-43).

Regarding claims 34 and 42, the additional limitations of the computer-readable medium and computing device, respectively, as claimed correspond to the limitations as claimed in claim 8, and are analyzed as discussed with respect to the rejection of claim 8.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SON P. HUYNH whose telephone number is (571)272-7295. The examiner can normally be reached on 9:00 - 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher S. Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Son P Huynh/ October 1, 2009
Primary Examiner, Art Unit 2424